CLAIMS

What is claimed is:

1. A method of code programming a ROM device having bit lines oriented in a first direction on or within a substrate, word lines formed relative to the bit lines in a second direction such that the bit lines and word define code positions, and a first implant resistant material located over the substrate, the method comprising the following:

forming a plurality of code openings over the code positions and in the first implant resistant material to form a first code pattern which comprises substantially all of the code openings;

forming a developable anti-reflective coating layer over the substrate to fill substantially all of the code openings;

forming a second implant resistant layer over the developable anti-reflective coating layer;

processing a portion of the second implant resistant layer to form a second code pattern which comprises a portion of the code openings of the first code pattern; and

removing the developable anti-reflective coating layer from the code openings of the second code pattern.

2. The method as set forth in claim 1, wherein:

the processing comprises removing a portion of the second implant resistant layer to form the second code pattern; and

the removing occurs substantially simultaneously with the processing.

3. The method as set forth in claim 1, wherein:

the pattern of the first code pattern has an area, which is greater than an area encompassed by the second code pattern; and

the first code pattern is formed in a layer of hardened photoresist material.

4. The method as set forth in claim 1, wherein:

each code opening is formed over a word line between two bit lines; and

the second implant resistant layer extends over and protects a bit line region, which is located between two adjacent code positions of a word line, from being contaminated with implant species during a subsequent coding step.

5. The method as set forth in claim 1, wherein the first code pattern comprises a plurality of code openings formed in a dielectric material.

6. The method as set forth in claim 5, wherein the first code pattern is formed in a layer of silicon dioxide.

7. The method as set forth in claim 5, wherein the first code pattern is formed in a layer of silicon nitride.

8. The method as set forth in claim 5, wherein the first code pattern is formed in a layer of silicon oxy-nitride.

9. The method as set forth in claim 1, wherein the first code pattern is formed in a layer of organic material.

10. The method as set forth in claim 1, wherein the first code pattern comprises all of the code openings of the device.

11. A ROM device code programmed using the method as set forth in claim 1.

12. The method as set forth in claim 1, wherein the developable anti-reflective coating layer is formed over the substrate without mixing with the first implant resistant layer.

13. The method as set forth in claim 1, wherein the second implant resistant layer comprises photoresist.

14. The method as set forth in claim 1, wherein the second implant resistant layer is processed to form a second code pattern which comprises a plurality of non-overlapping portions of the code openings of the first code pattern.

15. The method as set forth in claim 1, wherein the first implant resistant layer is processed without an etch-back process.

16. The method as set forth in claim 1, wherein the developable anti-reflective coating is removed by developing the developable anti-reflective coating of the second code pattern.

17. The method as set forth in claim 16, wherein the removal of the developable anti-reflective coating comprises controlling a baking temperature.

18. The method as set forth in claim 16, wherein the removal of the developable anti-reflective coating comprises controlling an amount of light exposure of the developable anti-reflective coating.

19. The method as set forth in claim 16, wherein the removal of the developable anti-reflective coating comprises controlling a baking temperature and an amount of light exposure of the developable anti-reflective coating.

20. The method as set forth in claim 1, wherein the developable anti-reflective coating comprises a developable bottom anti-reflective coating.

21. A method of code programming a ROM device, comprising

providing a substrate having a plurality of code positions, and a first code pattern which comprises a plurality of code openings that expose substantially all of the code positions; and

forming a developable anti-reflective coating over the substrate to fill the plurality of code openings.

22. The method as set forth in claim 21, wherein the first code pattern comprises a plurality of code openings formed in a hardened photoresist material.

23. The method as set forth in claim 21, wherein the first code pattern comprises a plurality of code openings formed in a dielectric material.

24. The method as set forth in claim 21, wherein the dielectric material comprises silicon dioxide.

25. The method as set forth in claim 21, wherein the developable anti-reflective coating is formed by a spin on coating method.

26. The method as set forth in claim 21, further comprising removing a portion of the developable anti-reflective coating to form a second code pattern, the second code pattern including less than all of the plurality of code openings.

27. The method as set forth in claim 21, further comprising forming a photoresist layer over the developable anti-reflective coating and patterning the photoresist layer to form a second code pattern which comprises a portion of the plurality of code openings of the first code pattern.

28. The method as set forth in claim 21, wherein the developable anti-reflective coating is formed over the substrate without an etch-back process to expose portions of the first code pattern.

29. The method as set forth in claim 21, wherein the method is effective to provide a relatively wider photo process window compared to a substantially identical method practiced without a developable anti-reflective coating.

30. The method as set forth in claim 26, wherein the developable anti-reflective coating is removed by controlling at least one of baking temperature and light exposure.

31. The method as set forth in claim 26, wherein the developable anti-reflective coating is removed by exposing the developable anti-reflective coating to a photo developer.

32. The method as set forth in claim 21, wherein:

the method further comprises forming an implant resistant layer over the developable anti-reflective coating and patterning the implant resistant layer to form a second code pattern which comprises a portion of the plurality of code openings of the first code pattern;

each code opening is formed over a word line between two bit lines; and

the implant resistant layer extends over and protects a bit line region, which is located between two adjacent code positions of a word line, from being contaminated with implant species during a subsequent coding step.

32. A ROM code programmed using the method as set forth in claim 21.